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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,173	04/19/2004	Robert Frederick Benson	1372.151.PRC	3172
21901	7590	10/21/2008		
SMITH HOPEN, PA 180 PINE AVENUE NORTH OLDSMAR, FL 34677			EXAMINER WALKER, KEITH D	
			ART UNIT	PAPER NUMBER
			1795	
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			10/21/2008	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/709,173	<b>Applicant(s)</b> BENSON ET AL.	
	<b>Examiner</b> KEITH WALKER	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 29 July 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,3-9,12-14 and 16-40 is/are pending in the application.
- 4a) Of the above claim(s) 18-38 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-9,12-14,16,17,39 and 40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

***Detailed Action***

***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/29/08 has been entered.

***Response to Amendment***

Claims 1, 3-9, 12-14 & 16-40 are pending in the application and claims 18-38 are withdrawn from consideration. Claims 1, 3-9, 12-14, 16, 17 & 39-40 are pending examination as discussed below.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 3-9, 12-14, 16, 17 & 39-40 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Regarding claim 1, the

Art Unit: 1795

limitation "a first fiberglass cloth positioned adjacent to the electrolyte solution and distal to the aluminum anode" is not described in the instant specification and as such is new matter.

Claims depending from claims rejected under 35 USC 112, first paragraph are also rejected for the same.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 3-6, 12-14, 16, 17, 39 & 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,991,876 (Narang) in view of US 4,001,043 (Momyer).

Narang teaches an electrochemical cell comprising an aluminum anode, a solid alkali metal peroxide cathode comprising sodium peroxide particulates and a separator comprising a fiberglass cloth between the anode and cathode (Fig. 1; 4:7-10, 6:4-12, 8:1-8, Claim 1, Examples). The cathode comprises a nickel current collector and the use of a glass woven separator between the anode and the cathode (Fig. 1; Examples). Since the anode, cathode and electrolyte taught by Narang are equivalent to the claimed anode, cathode and electrolyte, it is inherent that the components have the same characteristics. Therefore, it is inherent that the alkali metal peroxide of Narang passes through the metal electrode.

While Narang is silent to a second layer of fiberglass separator, the duplication of components to serve the same purpose is obvious to one of skill in the art. The second separator layer insures separation between the anode and cathode electrode to keep the battery from shorting out. Regarding the distal relationship of the separator to the anode, locating the anode away from the separator material would be obvious to one skilled in the art to ensure the anode does not short out against the cathode. Since the space between is still filled with electrolytic material, the battery still functions in the same manner.

Regarding claims 16, 17 & 39, the disclosure of Narang differs from Applicant's claims in that Narang does not specifically disclose the ratio of the electrode bulk surface area of the anode to the electrode bulk surface area of the cathode. Nevertheless, it is well known in that art that the optimal ratio is dependent upon physical configuration of the galvanic cell and the chemical reactions present. Therefore, it would have been within the skill of the ordinary artisan to adjust the ratio of the electrode bulk surface area of the anode to the electrode bulk surface area of the cathode in accordance to the configuration of the electrochemical and the kinetics of the reaction. Differences in prior art ranges are unpatentable unless they produce a new and unexpected result, which is different in kind and not merely in degree from the results of the prior art. Discovery of optimum ranges of a result effective variable in a known process is ordinarily within the skill of art and selection of the optimum ranges within the general condition is obvious. (MPEP 2144.05)

Narang is silent to a silver mesh current collector and an aqueous electrolyte.

Art Unit: 1795

Momyer teaches a metal-water electrochemical cell comprising a lithium anode, a silver current collector and a electrolyte comprising soluble peroxide ions, including hydrogen peroxide, sodium peroxide, sodium super oxide, lithium peroxide, potassium peroxide and potassium super oxide (Claims 1, 2; 4:59-68). A silver mesh current collector is taught as the preferred choice for peroxide reaction cells, but is also taught as equivalent to nickel current collectors (4:45-55). Momyer teaches it would be obvious to one skilled in the art to incorporate the same electrode configuration with an aqueous electrolyte. Combining prior art elements according to known methods to yield predictable results and using known techniques to improve similar devices in the same way are considered obvious to one of ordinary skill in the art (KSR, MPEP 2141 (III)).

Therefore it would be obvious to one skilled in the art to use the preferred silver mesh current collector of Momyer for the nickel current collector of Narang to improve cell performance. The solid silver mesh current collector is equivalent to a silver plated copper wire.

2. Claims 1-3, 5-9, 11-15 & 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,445,905 (Marsh) in view of US 4,001,043 (Momyer).

With respect to claims 1, 2, 40 & 41, Marsh teaches an electrochemical cell comprising an anode of aluminum (12), a catholyte of hydrogen peroxide (18) and a spacer (30) (Figure 1; 2:20-54, example 1).

However, Marsh does not teach the use of an alkali metal peroxide cathode.

Momyer teaches a metal-water electrochemical cell comprising a lithium anode, a silver cathode and lithium hydroxide electrolyte in which the anode and the cathode are immersed. Momyer further discloses an anode moderator consisting of soluble peroxide ions, including hydrogen peroxide, sodium peroxide, sodium super oxide, lithium peroxide, potassium peroxide and potassium super oxide (Claims 1, 2; 4:59-68). Hydrogen peroxide and sodium peroxide are taught to be functionally equivalent soluble peroxides.

Therefore, it would have been obvious to one of ordinary skill in the art to substitute lithium peroxide (or potassium peroxide) for the hydrogen peroxide in the electrochemical cell disclosed by Marsh.

Regarding claim 6, Marsh is silent to using a woven silver plated copper wire for the cathode current collector. Momyer teaches the cathode current collector metal can be any of nickel, iron or preferably silver and that the metal collector is in the form of a mesh (4:45-60). As such, Momyer teaches it is known in the art that silver is equivalent to nickel for a cathode current collector. Therefore, because these two metals are art recognized equivalents at the time of the invention was made, one of ordinary skill in the art would have found it obvious to substitute the silver metal mesh for the nickel metal.

The silver plated copper wire is equivalent to the solid silver wire. Since the same metals are used on the surface of the current collector, the metal used and the function of the metals as the cathode current collector are equivalent. It would be obvious to one skilled in the art at the time of the invention to substitute a silver plated

copper wire for the solid silver wire taught by Momyer in order to save on the fabrication costs of the battery.

With respect to claim 7, Marsh teaches the aluminum with a purity of at least about 99.99% (3:44-46).

With respect to claims 8 & 9 Marsh teaches the use of potassium chloride or potassium hydroxide as the electrolyte solution (3:54-68).

With respect to claims 11-14, Marsh teaches the addition of water and hydrogen peroxide salt to the catholyte (3:54-68).

3. Claims 4, 10, 16 & 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,445,905 (Marsh) in view of US 4,001,043 (Momyer) as applied to claim 1 above and further in view of US 6,991,876 (Narang).

The teachings of Marsh and Momyer as discussed above are incorporated herein.

Marsh and Momyer are silent to using a fiberglass cloth barrier for the electrically insulating barrier.

Regarding claims 4 & 10, Narang teaches an electrochemical cell comprising an aluminum anode, a solid alkali metal peroxide cathode comprising lithium peroxide (or sodium peroxide particulates) and a separator (an electrically insulating barrier) (6:4-12, 8:1-8, claim 1, Examples). Narang teaches the cathode further comprises a nickel current collector (Fig. 1; Examples). Since the anode, cathode and electrolyte taught by Narang are equivalent to the claimed anode, cathode and electrolyte, it is inherent that



the components have the same characteristics. Therefore, it is inherent that the alkali metal peroxide of Narang passes through the metal mesh electrode of Momyer.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the electrically insulating barrier of Momyer with the fiberglass barrier taught by Narang so as to provide an actual material for use as the electrolytic barrier and improve the operation of the battery by improving the components in the battery (1:45-55).

With respect to claims 16 & 42, Narang does not specifically disclose the surface area of the cathode and surface area of the anode are substantially stoichiometrically matched. However, it is the position of the examiner that such properties are inherent, given that both Narang and the present application utilize the same electrodes in the electrochemical cell. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature *is necessarily present in that which is described in the reference*. In re Robertson, 49 USPQ2d 1949 (1999) (MPEP 2112).

### ***Response to Arguments***

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection as necessitated by amendment.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir.

1986). Applicant's arguments against the Marsh and Momyer references individually are not persuasive. Applicant argues that the battery of Momyer requires both the aqueous lithium hydroxide and peroxide ions. However, this position is not supported by the Momyer reference since the peroxide ions are taught as an additive to aid in the performance of the battery. Furthermore, this argument is not relevant to the rejection as presented above. The rejection is based on the teaching that hydrogen peroxide and sodium peroxide and lithium peroxide are all well known in the art as equivalent.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEITH WALKER whose telephone number is (571)272-3458. The examiner can normally be reached on Mon. - Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1795

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

K. Walker

/PATRICK RYAN/  
Supervisory Patent Examiner, Art Unit 1795